

Proposal CS686

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Abstract—Topic will be the route-finding problems for Autonomous Guided Vehicles. Includes the general path finding and collision avoidance.

I. INTRODUCTION

An automated guided vehicle or automatic guided vehicle (AGV) is a robot that follows along marked long lines or wires on the floor, or uses radio waves, vision cameras, magnets, or lasers for navigation. AGVs are commonly used to transport raw materials in industry such as paper, steel, rubber, metal, and plastic. AGVs are also deployed within warehouses and fulfillment centers to automate material handling and package logistics.

The route-finding problem and the AGV scheduling problem is a interesting problem because it is more than a path-finding problem. It is a combination of path finding, task scheduling and collision avoidance.

REFERENCES

- [1] H. Fazlollahtabar. “Autonomous Guided Vehicles Methods and Models for Optimal Path Planning”. New York, NY: Springer, 2004.
- [2] J. Evans, B. Krishnamurthy, B. Barrows, T. Skewis, and V. Lumelsky, “Handling real-world motion planning: A hospital transport robot,” *IEEE Control Syst.*, vol. 12, no. 1, pp. 15–19, Feb. 1992.
- [3] P. Jensfelt and S. Kristensen, “Active global localization for a mobile robot using multiple hypothesis tracking,” *IEEE Trans. Robot. Autom.*, vol. 17, no. 5, pp. 748–760, Oct. 2001.
- [4] B. Graf, M. Hans, and R. D. Schraft, “Care-O-bot II—Development of a next generation robotic home assistant,” *Auto. Robot.*, vol. 16, no. 2, pp. 193–205, 2004.
- [5] (Aug. 15, 2017). Panasonic HOSPI. [Online]. Available: <http://news.panasonic.com/global/topics/2015/44009.html>
- [6] M. Takahashi, T. Suzuki, H. Shitamoto, T. Moriguchi, and K. Yoshida, “Developing a mobile robot for transport applications in the hospital domain,” *Robot. Auto. Syst.*, vol. 58, no. 7, pp. 889–899, 2010.
- [7] R. Tasaki, M. Kitazaki, J. Miura, and K. Terashima, “Prototype design of medical round supporting robot “Terapio,”” in *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, Seattle, WA, USA, May 2015, pp. 829–834.
- [8] M. Labbé and F. Michaud, “Online global loop closure detection for largescale multi-session graph-based SLAM,” in *Proc. IEEE/RSJ Int. Conf. Intell. Robots Syst.*, Chicago, IL, USA, Sep. 2014, pp. 2661–2666.
- [9] J. McDonald, M. Kaess, C. Cadena, J. Neira, and J. J. Leonard, “Real-time 6-DOF multi-session visual SLAM over large-scale environments,” *Robot. Auto. Syst.*, vol. 61, no. 10, pp. 1144–1158, 2013.
- [10] S. Li and D. Lee, “RGB-D SLAM in dynamic environments using static point weighting,” *IEEE Robot. Autom. Lett.*, vol. 2, no. 4, pp. 2263–2270, Oct. 2017.
- [11] G. Grisetti, R. Kümmerle, C. Stachniss, and W. Burgard, “A tutorial on graph-based SLAM,” *IEEE Intell. Transp. Syst. Mag.*, vol. 2, no. 4, pp. 31–43, Feb. 2010.